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EXAMINER	
CHANG, EDITH M	
ART UNIT	PAPER NUMBER
2637	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/186,977	ARMISTEAD, R. ASHBY	
	Examiner	Art Unit	
	Edith M. Chang	2637	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 September 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-6,8-11 and 14-52* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6,8-11,14-36 and 38-52* is/are rejected.

7)☒ Claim(s) *37* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *07 February 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on September 13 2005 has been entered.

Response to Arguments

2. Applicant's arguments filed on September 13, 2000 have been fully considered but they are not persuasive.

Argument: Applicant argues that regarding claims 1, 14, 19, 22, 28 and 36, the reference Bellenger (US 6,263,016 B1) does not teach or suggest transferring control over sessions one circuit to another circuit responsive to the removal or failure of the circuit.

Response: The session is idle/inactive, when the DSP (data-handling resource) ceases to operate/response to a session upon the data-handling resource fail to be available as disclosed in Bellenger (column 6, lines 15-19, FIG.12A-13B IDEL detection). The courses of ceasing operation and failure are *well known in the art* as the data-handling resource being unavailable failing to response/operate as disclosed in

Bellenger, and being removed failing to response/operate as taught by Osler et al. (US 6,038,222) in column 3, lines 20-25, wherein the IDLE state of the modem session entered upon any failure during an active state wherein the any failure includes the link failure (column 3, lines 5-8 '222) and DSP failure (column 22, lines 15-22 '222).

Product and Apparatus claims, when the structure recited in the reference is substantially identical to that of the claims, claimed properties or functions are presumed to be inherent. Where the claimed and prior art apparatus are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a prima facie case of either anticipation or obviousness has been established (MPEP 2112.01 [R-2]).

Argument: Applicant argues that Bellenger does not teach or suggest the interpretation of a transferring an idle session of one DSP to another DSP.

Response: Bellenger discloses in FIG.13B block 1344M & 1348 to transfer a backup to a primary and stated in column 6, lines 15-19 to react the cessation of the session by reallocation (transferring) of subscriber line, and DSP resources.

Argument: Applicant argues that Bellenger's DSPs are required to perform multiple tasks in response to an idle session so does not anticipate the limitation of where said first data-handling resource ceases to operate upon failure.

Response: Bellenger discloses the session of the DSP detected being idle is terminated (FIG.12A 1216A) or cleardown (FIG.13B 1344B) to *ceases to operate*. Hence, Bellenger discloses the limitation of where said first data-handling resource ceases to operate upon failure.

Claim Objections

3. Claim 37 is objected to because of the following informalities:

Claim 37, line 1: "wherein a frame" should be "the data in the frame".

Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claim 50 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 50, line 3: "the existing data connection" lacks antecedent basis.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claim 1-2, 4-6, 14-21, *28-35* and 38-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bellenger et al. (US 6,263,016 B1) in view of Biba et al. (US 4,521,891) and Sinibaldi et al. (US 5,771,232).

Regarding **claims 1**, **28** & **38-39,** in FIG.4, Bellenger et al. discloses a multiple-modem system/a data communication interface and the method, comprising: a data bus element 410 connecting multiple DSPs (or data-handling resources: elements 414 on cards 400A, 402, 404, 406 and 408, wherein each 414 comprises 24 data handling resources to handle up to 24 subscriber lines from 418A-X, column 12 lines 48-54) handling the data from the connections of the subscriber lines, wherein the DSP 414 (one resource handling a subscriber line in the primary DSP of one line card) is the first data-handling resource and the DSP 424 (the backup/local resource in the DSP 424 of the processing card 402) is the second data-handling resource, the controller 404 (as the data-handling resource controller) directing (transferring) the data connections/communications between DSPs, when the first DSP 414 is idle (no communications), not appropriate to use or not turned to the normal (comprising any condition/defect causing the terminate of the normal operation that data should not direct to it, column 6 lines 15-20), the data from the connection is directed to the second/backup DSP 424 (FIG.13A-13B, when the primary DSP session/connection is idle tested at 1210, the data is directed to the second/backup DSP at 1218) without loss of the data connection. The DSPs (elements 414 & 424), the data-handling resources, connected to the memory (elements 420 and 430) to save and retrieve the internal information regarding the connections (column 13 lines 1-60 wherein the info in the table/memory contains the info for all DSP resources

column 13 lines 30-35) such as the data transformation information, session logs, etc. (column 13 lines 40-55, column 16 lines 35-40, wherein the record of the subscriber table containing the data transformation) which are dynamically/continually brought up to date to make available/usable by repeating the saving and retrieving during the connection and session (periodically, as in column 16 lines 40-42 frequently/time to time, and as stated in column 19 lines 22-25 in a round robin manner), wherein the session of the DSP detected being idle is terminated (FIG.12A 1216A) or cleardown (FIG.13B 1344B) to ceases to operate.

However, Bellenger et al. does not explicitly show in the art the well-known inter connection of the data handling resources in the line card 400 or the digital signal processing card 402 with multiple data handling resources, Bellenger et al. discloses the data handling resources on the. DSP 414 or 424 connecting to the TDM bus 410 (column 14 lines 21-30). Sinibaldi et al. teaches the well- known inter card/resource connection in FIG.1, wherein a card with multiple DSPs (data handling resources). In FIG.1, the DSPs of different modem cards connect to TDM bus 50 and 51 for handling data connections (column 2 lines 48-60); and connect to bus 15 with 46 (column 2 lines 30-48) for inter card connection. In FIG.3, Sinibaldi et al. further teaches the separate bus 54 (other than the TDM bus 55/56, column 5 lines 12-17) in the card for inter DSPs connections (column 5 lines 21-25). As Bellenger et al.'s multiple-modem system and method handling the data of multiple sessions/connections of multiple subscriber lines in a circuit card, at the time of the invention, it would have been obvious to a person of ordinary skill in the art to have (show) the well-known connection structure of a circuit

card with multiple data handling resources taught by Sinibaldi et al. in the DSP of the line card 400, digital processing card 402, control card 404 and channel card 408, to perform real-time conversions of signal associated with modem (column 1 lines 5-12) for an improved communication subsystem (column 1 lines 34-38). The combined/modified Bellenger et al.'s card with inter card/DSP connections taught by Sinibaldi et al. has TDM bus and a separate bus for the inter card/DSP connections.

Bellenger et al. does not specify the link control information being transmitted in a separate bus. Biba et al. teaches the data/packet (Fig_8) stored in the multiple-modem system/method in RAM 240 of Fig_7 and column 12 lines 1-5, wherein the data/packet containing the link control information developed by the modem (data handling resources): the frame acknowledgement ACK in Fig_8B is saved and retrieved via the bus 238 by multiple modems 22 connected to the cable 14 (Fig._1 as the data bus for data connection). As Bellenger et al.'s multiple-modem system and method handling the data of multiple sessions/connections, at the time of the invention, it would have been obvious to a person of ordinary skill in the art to have the acknowledgement of the link control information in the internal information saved in and retrieved from the Bellenger et al's memory 420 (FIG.4 `016) via a separate bus taught by Biba et al. in the DSP 402 (backups up to 24 data handling resources of the primary DSP) that the internal information stored in the memory 420, to control the flow for the purpose of not loosing data of the session and increasing the capacity by storing the link control info for the multiple connections (column 2 lines 40-45, column 3 line 10).

The combined/modified Bellenger et al.'s card with inter card/DSP connections taught by Sinibaldi et al., the information comprising the link control information taught by Biba et al. stored in the memory is saved and retrieved over the separate bus.

Regarding **claim 2**, Bellenger et al. discloses the first data-handling resource/modem comprising a first digital signal processor (424 FIG.4), and the second data-handling resource comprises a second digital signal processor (414 FIG.4).

Regarding **claim 4**, Bellenger et al. discloses the data-handling resource controller and the resource internal state memory also reside on the common circuit card (404 FIG.4).

Regarding **claim 5,** Bellenger et al. discloses the first digital signal processor/modem resides on a first circuit card (402 FIG.4) within the interface, and wherein the second digital signal processor/modem resides on a second circuit card (400A FIG.4) within the interface and sharing a common bus (410 FIG.4) with the first circuit card.

Regarding **claim 6**, Bellenger et al. discloses the data-handling resource controller resides on a third circuit card within the interface (404 FIG.4), and the resource internal state memory (432 FIG.4) also resides on the third circuit card.

Regarding **claims 14-17**, Bellenger et al. discloses a multiple-modem system and a data communication interface comprising: *a data bus* element 410 connecting multiple *N+I DSPs* (N elements 414 on cards 400A, and one is the 424 of local DSP performing the modem function) handling the data from the connections of the subscriber lines,

wherein the DSPs 414 (the primary) are the first N data-handling resources and the DSP 424 (the backup/local) is the N+1 the data-handling resource, the *controller* 404 (the data-handling resource controller) *monitoring and directing* the data connections between DSPs, when any one of the first/primary DSPs 414 is idle, not appropriate to use or not turned to the normal (comprising any defect causing the terminate of the normal operation that data should not direct to it) as well-known in the art, the data from the connection is directed to the N+Ith backup DSP 424 (FIG.13A-13B, when the primary DSP is idle tested at 1210, the data is directed to the second/backup DSP at 1218) without loss the connection. The DSPs (elements 414 & 424), the data-handling resources, connected to the memory (elements 420 and 430) to save and retrieve the internal information regarding the connections (column 13 lines 1-60) such as the data transformation information, session logs, etc. (column 13 lines 40-55) dynamically during the connection and session.

However, Bellenger does not explicitly show in the art the well-known inter connection of the data handling resources in the line card 400 or the digital signal processing card 402 with multiple data handling resources, Bellenger et al. teaches the data handling resources on the DSP 414 or 424 connecting to the TDM bus 410 (column 14 lines 21-30). Sinibaldi et al. teaches the well-known inter card/resource connection in FIG.1, wherein a card with multiple DSPs (data handling resources). In FIG.1, the DSPs of different modem cards connect to TDM bus 50 and 51 for handling data connections (column 2 lines 48-60); and connect to bus 15 with 46 (column 2 lines 30-48) for inter card connection. In FIG.3, Sinibaldi et al. further teaches the separate his 54 (other than

the TDM bus 55/56, column 5 lines 12-17) in the card for inter DSPs connections (column 5 lines 21-25). As Bellenger et al.'s multiple-modem system and method handling the data of multiple sessions/connections of multiple subscriber lines in a circuit card, at the time of the invention, it would have been obvious to a person of ordinary skill in the art to have (show) the well-known connection structure of a circuit card with multiple data handling resources taught by Sinibaldi et al. in the DSP of the line card 400, digital processing card 402, control card 404 and channel card 408, to perform real-time conversions of signal associated with modem (column 1 lines 5-12) for an improved communication subsystem (column 1 lines 34-38). The combined/modified Bellenger et al.'s card with inter card/DSP connections taught by Sinibaldi et al. has TDM bus and a separate bus for the inter card/DSP connections.

Bellenger et al. does not specify the link control information being transmitted in a separate bus. Biba et al. teaches the data/packet (Fig 8) stored in the multiple-modem system/method in RAM 240 of Fig_7 and column 12 lines 1-5, wherein the data/packet containing the link control information developed by the modem (data handling resources): the frame acknowledgement ACK in Fig_8B is saved and retrieved via the bus 238 by multiple modems 22 connected to the cable 14 (Fig._1 as the data bus for data connection). As Bellenger et al.'s multiple-modem system and method handling the data of multiple sessions/connections, at the time of the invention, it would have been obvious to a person of ordinary skill in the art to have the acknowledgement of the link control information in the internal information saved in and retrieved from the Bellenger et al's memory 420 (FIG.4 `016) via a separate bus

taught by Biba et al. in the DSP 402 (backups up to 24 data handling resources of the primary DSP) that the internal information stored in the memory 420, to control the flow for the purpose of not loosing data of the session and increasing the capacity by storing the link control info for the multiple connections (column 2 lines 40-45, column 3 line 10).

The combined/modified Bellenger et al.'s card with inter card/DSP connections taught by Sinibaldi et al., the information comprising the link control information taught by Biba et al. stored in the memory is saved and retrieved over the separate bus.

Regarding **claim 18**, in FIG.5, Bellenger et al. discloses the voice codec (elements 418 & 502) to sample the signal from the subscriber lines 1-24.

Regarding **claim 19**, Bellenger et al. discloses a multiple-modem system and a data communication interface comprising: a data bus element 410 connecting multiple N DSPs (or data-handling resources: elements 414 on cards 400A & the 424 of local DSP in 104A of FIG. IA, wherein each 414 comprises 24 data handling resources to handle up to 24 subscriber lines from 418A-X, column 12 lines 48-54, and the remote DSPs at 106 FIG.1A stated in column 12 lines 60-65) handling the data from the connections of the subscriber lines, the controller 404 directing the data connections between DSPs, when any one of the DSPs in the line card is idle, not appropriate to use or not turned to the normal (comprising any condition/defect causing the terminate of the normal operation that data should not direct to it), the data from the connection is directed to the another DSP, the backup DSP (FIG. 13A-13B, when the primary DSP in the line card is idle tested at 1210, the data is directed to the backup DSP at 1218) without

loss the data connection. The DSPs, the data-handling resources, connected to the memory (elements 420 and 430) to save and retrieve the internal information regarding the connections (column .13 lines 1-60) such as the data transformation information, session logs, etc. (column 13 lines 40-55) dynamically/continually brought up to date to make available/usable by repeating the saving and retrieving during the connection and session.

Bellenger et al. teaches the data handling resources on the DSP 414 or 424 connecting to the TDM bus 410 (column 14 lines 21-30), but Bellenger et al. does not explicitly show in the art the well-known inter connection of the data handling resources in the line card 400 or the digital signal processing card 402 with multiple data handling resources. Sinibaldi et al. teaches the well-known inter card/resource connection in FIG.1, wherein a card with multiple DSPs (data handling resources). In FIG.1, the DSPs of different modem cards connect to TDM bus 5G and 51 for handling data connections (column 2 lines 48-60); and connect to bus 15 with 46 (column 2 lines 30-48) for inter card connection. In FIG.3, Sinibaldi et al. further teaches the separate bus 54 (other than the TDM bus 55/56, column 5 lines 12-17) in the card for inter DSPs connections (column 5 lines 21-25). As Bellenger et al.'s multiple-modem system and method handling the data of multiple sessions/connections of multiple subscriber lines in a circuit card, at the time of the invention, it would have been obvious to a person of ordinary skill in the art to have (show) the well-known connection structure of a circuit card with multiple data handling resources taught by Sinibaldi et al. in the DSP of the line card 400, digital processing card 402, control card 404 and channel card 408, to perform real-time conversions of signal

associated with modem (column 1 lines 5-12) for an improved communication subsystem (column 1 lines 34-38). The combined/modified Bellenger et al.'s card with inter card/DSP connections taught by Sinibaldi et al. has TDM bus and a separate bus for the inter card/DSP connections.

Bellenger et al. does not specify the link control information being transmitted in a separate bus. Biba et al. teaches the data/packet (Fig 8) stored in the multiple-modem system/method in RAM 240 of Fig_7 and column 12 lines 1-5, wherein the data/packet containing the link control information developed by the modem (data handling resources): the frame acknowledgement ACK in Fig_8B is saved and retrieved via the bus 238 by multiple modems 22 connected to the cable 14 (Fig._1 as the data bus for data connection). As Bellenger et al.'s multiple-modem system and method handling the data of multiple sessions/connections, at the time of the invention, it would have been obvious to a person of ordinary skill in the art to have the acknowledgement of the link control information in the internal information saved in and retrieved from the Bellenger et al's memory 420 (FIG.4 `016) via a separate bus taught by Biba et al. in the DSP 402 (backups up to 24 data handling resources of the primary DSP) that the internal information stored in the memory 420, to control the flow for the purpose of not loosing data of the session and increasing the capacity by storing the link control info for the multiple connections (column 2 lines 40-45, column 3 line 10).

The combined/modified Bellenger et al.'s card with inter card/DSP connections taught by Sinibaldi et at., the information comprising the link control information taught by Biba et al. stored in the memory is saved and retrieved over the separate bus.

Regarding **claim 20,** in FIG.13A & FIG.13B, Bellenger et al. discloses the controller drops the connection at 1212B when all resources do not take the connection.

Regarding **claim 21**, in FIG.13A & FIG.13B, Bellenger et al. discloses directing the data from the connection to any idle resource having capacity to handle the data at 1326 FIG.13A by responding session/connection idle indication.

Regarding claim **29,** in FIG.4, Bellenger et al. discloses the DSP 424 (the backup/local) comprising a redundant resource.

Regarding **claims 30** & **31**, in FIG.4, Bellenger et al. discloses the DSP 414 receiving multiple simultaneous data connections from lines 1-14, and the information of the data connections stored in the memory is available to the local second (the backup) DSP or transferring the remote backup DSPs at 106 or 104B in FIG. IA based on the algorithm set in FIG.13A & FIG.13B where the resources having excess capacity processing the connections.

Regarding claim **32,** Bellenger et al. discloses changing the internal state information depending on the information loaded in (column 13 lines 25-30).

Regarding claims **33-35,** Bellenger et al. does not specify the frame acknowledgement, however in FIG.7 and FIG.8, Biba et al. teaches the data/packet stored in the multiple-modem system/method in RAM 240 and column 12 lines 1-5, wherein the data/packet containing the frame acknowledgement ACK in FIG.8B and sending the acknowledgement till storage is full that is all received data (or the data transmitted to the modem) saved (column 13 lines 30-50). As Bellenger et al.'s multiple-modem method handling the data/packet, at the time of the invention, it would have

been obvious to a person of ordinary skill in the art to store and send the acknowledgement taught by Biba et al. to control the flow for the purpose of not loosing data and increase the capacity.

Regarding **claim 40**, Bellenger et al. does not explicitly specify the information stored in the internal state configuration including one or more frame transmission records. However, Biba et al. teaches the data/packet (Fig_8) stored in the multiple-modem system/method in RAM 240 of Fig _7 and column 12 lines 1-5, wherein the data/packet containing the link control information developed by the modem (data handling resources): the frame acknowledgement ACK in Fig 8B is saved and retrieved via the bus 238 by multiple modems 22 connected to the cable 14 (Fig._1 as the data bus for data connection). As Bellenger et al.'s multiple-modem system and method storing internal state configuration of modems with inactive session and relocate the session connection to other modem with available sessions, at the time of the invention, it would have been obvious to a person of ordinary skill in the art to have the transmitted frames with a list of acknowledgements (324 Fig_8B '891) of the link control information in the internal information saved in and retrieved from the Bellenger et al's memory 420 (FIG.4 '016) via a separate bus taught by Biba et al. that the internal information stored in the memory 420 ('016), to control the flow for the purpose of not loosing data of the session and increasing the capacity (column 2 lines 40-45 '891) and improving collision detection by storing the link control info for the multiple connections (column 3 line 10 '891).

8. Claims 3 & 8-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bellenger et al. (US Patent 6,263,016 131) in view of Biba et al. (US 4,521,891) and Sinibaldi et al. (US 5,771,232) as applied to claim 1 above, and further in view of in view of Green et al. (US 5,949,762).

Regarding **claim 3**, further Green et al. teaches the first and second digital signal processors reside on a common circuit card within the interface (68 FIG.2 & 3, column 6 lines 18-40 where the DSPs 68 reside on a card 58 FIG.2). As Bellenger et al.'s multiple modems system, at the time of the invention, it would have been obvious to a person of ordinary skill in the art to have the first and second digital signal processors residing on a common circuit card taught by Green et al. for the purpose to process multiple calls/connections simultaneously for DSPs allocated in one card and save the cost (column 1 lines 57-60, column 2 lines 37-47).

Regarding **claim 8,** Bellenger et al. discloses the first data-handling resource and the second data-handling resources (the DSPs of line cards FIG.4, the DSPs of 402 and 602 FIG.4 & 6, column 36 lines 10-14) but does not specify the multiple digital signal processors in one card. However Green et al. teaches the multiple digital signal processors reside on a common circuit card (68 FIG.2 & 3, column' 6 lines 18-40 where the DSPs 68 reside on a card 58 FIG.2). As Bellenger et al.'s method passing the connections from one resource (the primary DSP) to other resources simultaneously (the backup DSP resources column 12 lines 50-65 where the primary DSP is bypassed), at the time of the invention, it would have been obvious to a person of ordinary skill in the art

to have Bellenger et al.'s first and second data-handling resources replaced by the multiple-modem board taught by Green et al. for the purpose to provide a modem or multiple modems for processing multiple calls simultaneously (Abstract, column 1 lines 57-60, column 2 lines 37-47).

Regarding **claim 9**, Bellenger discloses each circuit card comprise a card internal state memory saving the information from the DSP of the card (420/430 FIG.4).

Regarding **claims 10 & 11**, the modified Bellenger's interface with Green et al.'s teaching the first data-handling resource receives multiple simultaneous data connections and the second data-handling resource receives the selected connection by the conditions.

9. Claims 22-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bellenger et al. (US Patent 6,263,016 B l) in view of Biba et al. (US 4,521,891), Sinibaldi et al. (US 5,771,232) and Osier et al. (US 6,038,222).

Regarding **claim 22**, in FIG.4, Bellenger et al. discloses a multiple-modem subsystem, comprising: a data bus element 410 connecting multiple modems (cards 400A with DSPs 414) handling the data from the connections of the subscriber lines, wherein the primary modem 400 is the first data-handling resource and the backup/local modem 402 is the second data-handling resource, the controller 404 directing the data connections between modems, when the first modem 400A with DSP 414 is idle, not appropriate to use or not turned to the normal (data should not direct to it, column 6

lines 15-20), the data from the connection is directed to the second/backup modem 402 (FIG.13A-13B, when the primary DSP session/connection is idle tested at 1210, the data is directed to the second/backup DSP at 1218) without loss the connection. The modems (elements 400A & 402) are connected to the memory (elements 420 and 430) to save and retrieve the internal information regarding the connections (column 13 lines 1-60) such as the data transformation information, session logs, etc. (column 13 lines 40-55, column 16 lines 35-40, wherein the activity table containing link control information, the record of the subscriber table containing the data transformation) which are dynamically/continually brought up to date to make available/usable by repeating the saving and retrieving during the connection and session,

Bellenger et al. does not explicitly specify the removal of the first data-handling resource causing the link failure, however, it is well-known that the failure or removal of the first data-handling resource causing the link failure in turns the session does not turn to normal use (in idle) as taught by Osier et at. in FIG.2, column 3 lines 20-25 and column 4 lines 5-15 that the link failure or terminate link idles the modem session. Therefore, at the time of the invention, it would have been obvious to a person of ordinary skill in the art to have the Osier et al.'s teaching in Bellenger's condition comprising the resource failure or removal that causes the session idle by reset the modem software or terminate link to simplify the command set for the purpose of reduce the DSP circuitry complexity (column 2 lines 3-5 '222).

Bellenger et al. does not explicitly show the well-known inter connection of the data handling resources in the line card 400 or the digital signal processing card 402 with

multiple data handling resources. Sinibaldi et al. teaches the well-known inter card/resource connection in FIG.1, wherein a card with multiple DSPs (data handling resources). In FIG.1, the DSPs of different modem cards connect to TDM bus 50 and 51 for handling data connections (column 2 lines 48-60); and connect to bus 15 with 46 (column 2 lines 30-48) for inter card connection. In FIG.3, Sinibaldi et al. further teaches the separate bus 54 (other than the TDM bus 55/56, column 5 lines 12-17) in the card for inter DSPs connections (column 5 lines 21-25). As Bellenger et al.'s multiple-modem system and method handling the data of multiple sessions/connections of multiple subscriber lines of a circuit card, at the time of the invention, it would have been obvious to a person of ordinary skill in the art to have (show) the well-known connection structure of a circuit card with multiple data handling resources taught by Sinibaldi et al. in the DSP in the line card 400, digital processing card 402, control card 404 and channel card 408, to perform real-time conversions of signal associated with modem (column 1 lines 5-12) for an improved communication subsystem (column 1 lines 34-38). The combined/modified Bellenger et al.'s card with inter card/DSP connections taught by Sinibaldi et al. has TDM bus and a separate bus for the inter card/DSP connections.

Bellenger et al. does not specify the link control information being transmitted in a separate bus. Biba et al. teaches the data/packet (Fig_8) stored in the multiple-modem system/method in RAM 240 of Fig_7 and column 12 lines 1-5, wherein the data/packet containing the link control information developed by the modem (data handling resources): the frame acknowledgement ACK in Fig_8B is saved and retrieved via the bus 238 by multiple modems 22 connected to the cable 14 (Fig._1 as the data bus for data

connection). As Bellenger et al.'s multiple-modem system and method handling the data of multiple sessions/connections, at the time of the invention, it would have been obvious to a person of ordinary skill in the art to have the acknowledgement of the link control information in the internal information saved in and retrieved from the Bellenger et al's memory 420 (FIG.4 `016) via a separate bus taught by Biba et al. in the DSP 402 (backups up to 24 data handling resources of the primary DSP) that the internal information stored in the memory 420, to control the flow for the purpose of not loosing data of the session and increasing the capacity by storing the link control info for the multiple connections (column 2 lines 40-45, column 3 line 10).

The combined/modified Bellenger et al.'s card with inter card/0SP connections taught by Sinibaldi et al., the information comprising the link control information taught by Biba et at. stored in the memory is saved and retrieved over the separate bus.

Regarding claims **23** & **24**, Bellenger et al. discloses each data-handling resource/modem comprising a circuit card (element 400A, 402-408-FIG.4) with digital signal processor (elements 414-454 FIG.4).

10. Claims 25-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bellenger et al. (US 6,263,016 B1) in view of Biba et al. (US 4,521,891).

Regarding **claims 25** & **27**, in FIG.4/FIG.5, Bellenger et al. discloses the modem and its method, the modem resource DSP 402/414 comprising the *memory element 422/522* for storing internal state configuration of the modem (column 13 lines 54-57 wherein the modem parameters are stored), the *element 416* (as the external state-

loading subsystem) communicates the information stored in the element 422/522 to other device or receiving pre-existing information from other modem DSP via the bus 410, wherein the information (column 13 lines 1-60) containing the data transformation information, session logs, etc. (column 13 lines 40-55) dynamically/continually brought up to date. Hence Bellenger et al. discloses a modem comprising an *internal state configuration* (in element 422/522) and an *external state-saving/loading subsystem* (elements 416) as cited in the claim.

However, Bellenger et al. does not explicitly specify the information stored in the internal state configuration including one or more frame transmission records. Biba et al. teaches the data/packet 300 transmitted (Fig_8) stored in the multiple-modem system/method in RAM 240 of Fig _7 and column 12 lines 1-5, wherein the data/packet containing the link control information developed by the modem (data handling resources): the frame acknowledgement ACK in Fig 8B is saved and retrieved via the bus 238 by multiple modems 22 connected to the cable 14 (Fig._1 as the data bus for data connection). As Bellenger et al.'s multiple-modem system and method storing internal state configuration of modems with inactive session and relocate the session connection to other modem with available sessions, at the time of the invention, it would have been obvious to a person of ordinary skill in the art to have the transmitted frames with acknowledgement of the link control information in the internal information saved in and retrieved from the Bellenger et al's memory 420 (FIG.4 '016) taught by Biba et al. that the internal information stored in the memory 420 ('016), to control the flow for the purpose of not loosing data of the session and

increasing the capacity (column 2 lines 40-45 '891) and improving collision detection by storing the link control info for the multiple connections (column 3 line 10 '891).

Regarding claim **26,** in FIG. 5, Bellenger et al. discloses an external state-saving/loading subsystem (element 416) by loading the pre-existing internal state configuration from other modem to pre-configure the modem for a pre-existing data connection.

11. Claim 36 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bellenger et al. (US 6,263,016 B1), Biba et al. (US 4,521,891) and Sinibaldi et al. (US 5,771,232) in view of Rezaiifar et al. (US 6,408,003 B1) and Haymond et al. (US 4,987,571).

Regarding **claim 36**, the combined/modified Bellenger et al.'s apparatus and its method with Biba et al. and Sinibaldi et al.'s teaching including all subject matter (refer to the rationale of the claim 1 rejection), except the NAK list and record showing the transmit time.

Rezaiifar et al. teaches the apparatus (FIG.2 & FIG.3) and its method of the well-known retransmission frames with the Radio Link Protocol interface (Abstract). In FIG.2, the frame buffer 55 and re-sequencing buffer 92 & 94 have the frame number, the NAK list, frames received in sequence and the frames received out of sequence, however, Rezaiifar et al. does not explicitly specify the time stamp of the frame.

Haymond et al. teaches the time stamp in the message/frame to indicate the minor frame being assigned (column 5, lines 50-54 '571) and this time marks the start of the minor frame assigned for periodic messages.

As Rezaiifar et al. teaches the apparatus (FIG.2 & FIG.3) and its method of the well-known retransmission frames with the Radio Link Protocol interface (Abstract), wherein the RLP has periodic messages (in a twenty-ms time interval, FIG.9 304, column 12, lines 22-25), at the time of the invention, it would have been obvious to a person of ordinary skill in the art to have the time stamp in the message/frame taught by Haymond et al. in the frame of Rezaiifar et al. stored in the Biba et al.'s records stored in RAM 240 to resolving ambiguity in the reception of multiple retransmitted frames (column 1, lines 15-20 '003) and to effectively minimized the collisions (column 2, lines 12-20 '571).

12. Claim 41 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bellenger et al. (US 6,263,016 B1) in view of Biba et al. (US 4,521,891) and Sinibaldi et al. (US 5,771,232) as applied to claim 19 above, and further in view of Rezaiifar et al. (US 6,408,003 B1).

Regarding **claim 41**, Bellenger et al. does not explicitly to specify the contents of the link control information stored for reconnect the idle the modem session, however, Rezaiifar et al. teaches the apparatus (FIG.2 & FIG.3) and its method of the well-known retransmission frames with the Radio Link Protocol interface (Abstract). In FIG.2, the re-sequencing buffer has the frame number and the NAK list.

As Bellenger storing link control information for reconnect the idle the modem session, at the time of the invention, it would have been obvious to a person of ordinary skill in the art to have the frame number and the NAK list taught by Rezaiifar et al. in the Bellenger et al.'s information to resolving ambiguity in the reception of multiple retransmitted frames (column 1, lines 15-20 '003).

13. Claim 42 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bellenger et al. (US 6,263,016 B1) in view of Biba et al. (US 4,521,891) and Sinibaldi et al. (US 5,771,232) and as applied to claim 19 above, and further in view of Rezaiifar et al. (US 6,408,003 B1) and Haymond et al. (US 4,987,571).

Regarding **claim 42**, Bellenger et al. does not explicitly to specify the time stamp in the contents of link control information stored for reconnecting the idle the modem session.

Rezaiifar et al. teaches the apparatus (FIG.2 & FIG.3) and its method of the well-known retransmission frames with the Radio Link Protocol interface (Abstract). In FIG.2, the frame buffer 55 and re-sequencing buffer 92 & 94 have the frame number and frames received in sequence and the frames received out of sequence, however, Rezaiifar et al. does not explicitly specify the time stamp of the frame.

Haymond et al. teaches the time stamp in the message/frame to indicate the minor frame being assigned (column 5, lines 50-54 '571) and this time marks the start of the minor frame assigned for periodic messages.

As Rezaiifar et al. teaches the apparatus (FIG.2 & FIG.3) and its method of the well-known retransmission frames with the Radio Link Protocol interface (Abstract), wherein the RLP has periodic messages (in a twenty-ms time interval, FIG.9 304, column 12, lines 22-25), at the time of the invention, it would have been obvious to a person of ordinary skill in the art to have the time stamp in the message/frame taught by Haymond et al. in the frame of Rezaiifar et al. stored in the Bellenger et al.'s information stored in the in the internal state memory to resolving ambiguity in the reception of multiple retransmitted frames (column 1, lines 15-20 '003) and to effectively minimized the collisions (column 2, lines 12-20 '571).

14. Claims 43 and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bellenger et al. (US 6,263,016 B1) and Biba et al. (US 4,521,891) as applied to claim 25 and 26 above respectively, and further in view of Rezaiifar et al. (US 6,408,003 B1) and Haymond et al. (US 4,987,571).

Regarding **claims 43 & 44**, Bellenger et al. does not explicitly to specify the time stamp in the link control information stored for reconnecting the idle the modem session.

Rezaiifar et al. teaches the apparatus (FIG.2 & FIG.3) and its method of the well-known retransmission frames with the Radio Link Protocol interface (Abstract). In FIG.2, the frame buffer 55 and re-sequencing buffer 92 & 94 have the frame number and frames received in sequence and the frames received out of sequence, however, Rezaiifar et al. does not explicitly specify the time stamp of the frame.

Haymond et al. teaches the time stamp in the message/frame to indicate the minor frame being assigned (column 5, lines 50-54 '571) and this time marks the start of the minor frame assigned for periodic messages.

As Rezaiifar et al. teaches the apparatus (FIG.2 & FIG.3) and its method of the well-known retransmission frames with the Radio Link Protocol interface (Abstract), wherein the RLP has periodic messages (in a twenty-ms time interval, FIG.9 304, column 12, lines 22-25), at the time of the invention, it would have been obvious to a person of ordinary skill in the art to have the time stamp in the message/frame taught by Haymond et al. in the frame of Rezaiifar et al. stored in the Bellenger et al.'s information stored in the in the internal state memory to resolving ambiguity in the reception of multiple retransmitted frames (column 1, lines 15-20 '003) and to effectively minimized the collisions (column 2, lines 12-20 '571).

15. Claim 45 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bellenger et al. (US 6,263,016 B1) in view of Biba et al. (US 4,521,891), Rezaiifar et al. (US 6,408,003 B1) and Haymond et al. (US 4,987,571).

Regarding **claim 45**, in FIG.4, Bellenger et al. discloses a data communication interface comprising: multiple DSPs (or data-handling resources: elements *414* on cards *400A, 402,* 404, *406* and 408, wherein each 414 comprises 24 data handling resources to handle up to *24* subscriber lines from 418A-X, column 12 lines *48-54)* handling the data from the connections of the subscriber lines, wherein the DSP 414 (one resource handling a subscriber line in the primary DSP of one line card) is *the first*

data-handling resource and the DSP 424 (the backup/local resource in the DSP 424 of the processing card 402) is *the second data-handling resource, the controller* 404 (as *the data-handling resource controller)* directing *(transferring)* the data connections/communications between DSPs, when the first DSP 414 is idle (no communications), not appropriate to use or not turned to the normal (comprising any condition/defect causing the terminate of the normal operation that data should not direct to it, column 6 lines 15-20), the data from the connection is directed to the second/backup DSP 424 (FIG.13A-13B, when the primary DSP session/connection is idle tested at 1210, the data is directed to the second/backup DSP at 1218) without loss of the data connection. The DSPs (elements 414 & 424), the data-handling resources, connected to *the memory* (elements 420 and 430) to save and retrieve the internal information regarding the connections (column 13 lines 1-60 wherein the info in the table/memory contains the info for all DSP resources column 13 lines 30-35) such as the data transformation information, session logs, etc. (column 13 lines 40-55, column 16 lines 35-40, wherein the record of the subscriber table containing the data transformation), wherein the session of the DSP detected being idle is terminated (FIG.12A 1216A) or cleardown (FIG.13B 1344B) to *ceases to operate.*

However, Bellenger et al. does not explicitly specify the information stored in the internal state configuration including one or more frame transmission records. Biba et al. teaches the data/packet 300 transmitted (Fig_8) stored in the multiple-modem system/method in RAM 240 of Fig _7 and column 12 lines 1-5, wherein the data/packet containing the link control information developed by the modem (data

handling resources): the frame acknowledgement ACK in Fig 8B is saved and retrieved via the bus 238 by multiple modems 22 connected to the cable 14 (Fig._1 as the data bus for data connection). As Bellenger et al.'s multiple-modem system and method storing internal state configuration of modems with inactive session and relocate the session connection to other modem with available sessions, at the time of the invention, it would have been obvious to a person of ordinary skill in the art to have the transmitted frames with acknowledgement of the link control information in the internal information saved in and retrieved from the Bellenger et al's memory 420 (FIG.4 '016) taught by Biba et al. that the internal information stored in the memory 420 ('016), to control the flow for the purpose of not loosing data of the session and increasing the capacity (column 2 lines 40-45 '891) and improving collision detection by storing the link control info for the multiple connections (column 3 line 10 '891).

The combined/modified Bellenger et al.'s state information with Biba et al.'s teaching does not explicitly specify the NAK list and time stamp.

Rezaiifar et al. teaches the apparatus (FIG.2 & FIG.3) and its method of the well-known retransmission frames with the Radio Link Protocol interface (Abstract). In FIG.2, the frame buffer 55 and re-sequencing buffer 92 & 94 have the frame number, the NAK list and frames received in sequence and the frames received out of sequence, however, Rezaiifar et al. does not explicitly specify the time stamp of the frame.

Haymond et al. teaches the time stamp in the message/frame to indicate the minor frame being assigned (column 5, lines 50-54 '571) and this time marks the start of the minor frame assigned for periodic messages.

As Rezaiifar et al. teaches the apparatus (FIG.2 & FIG.3) and its method of the well-known retransmission frames with the Radio Link Protocol interface (Abstract), wherein the RLP has periodic messages (in a twenty-ms time interval, FIG.9 304, column 12, lines 22-25), at the time of the invention, it would have been obvious to a person of ordinary skill in the art to have the time stamp in the message/frame taught by Haymond et al. in the frame of Rezaiifar et al. stored in the Bellenger et al.'s information stored in the in the internal state memory to resolving ambiguity in the reception of multiple retransmitted frames (column 1, lines 15-20 '003) and to effectively minimized the collisions (column 2, lines 12-20 '571).

16. Claims 46-48 rejected under 35 U.S.C. 103(a) as being unpatentable over Bellenger et al. (US 6,263,016 B1), Biba et al. (US 4,521,891), Rezaiifar et al. (US 6,408,003 B1) and Haymond et al. (US 4,987,571) as applied to claim 45 above, and further in view of Osler et al. (US 6.038,222).

Regarding **claims 46 & 47**, Bellenger et al. discloses the controller directs data from the first data connection/session responsive to the terminated or cleardown of the session, however, does specify the failure or removal of the data-handling resources to cause the session terminated.

The courses of ceasing operation and failure are *well known in the art* as the data-handling resource being unavailable failing to response/operate as disclosed in Bellenger, and being removed failing to response/operate as taught by Osler et al. (US 6,038,222) in column 3, lines 20-25, wherein the IDLE state of the modem session

entered upon any failure during an active state wherein the any failure includes the link failure (column 3, lines 5-8 '222) and DSP failure (column 22, lines 15-22 '222), and the first data-handling resource ceases to operate (FIG.2).

As Bellenger et al. using the modem interface in a multiple-modems system, at the time of the invention, it would have been obvious to a person of ordinary skill in the art to have the states of a modem using the command/data interface taught by Osler et al. to let the computer and modem to share real-time information to reduce the computational cost of the modem (column 1, lines 34-42 '222).

Regarding **claim 48**, Bellenger et al. discloses the controller monitoring and detecting the IDLE state.

17. Claims 49-52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Biba et al. (US 4,521,891) in view of Rezaiifar et al. and Haymond et al. (US 4,987,571).

Regarding **claim 49**, Biba et al. discloses RAM (as the memory, Fig_7) comprising records of transmitted frame 300 with the ACK (column 16, lines 40-44), and data (Fig_8), however does not explicitly specify the transmit time.

Rezaiifar et al. teaches the apparatus (FIG.2 & FIG.3) and its method of the well-known retransmission frames with the Radio Link Protocol interface (Abstract). In FIG.2, the frame buffer 55 and re-sequencing buffer 92 & 94 have the frame number, the NAK list, frames received in sequence and the frames received out of sequence, however, Rezaiifar et al. does not explicitly specify the time stamp of the frame.

Haymond et al. teaches the time stamp in the message/frame to indicate the minor frame being assigned (column 5, lines 50-54 '571) and this time marks the start of the minor frame assigned for periodic messages.

As Rezaiifar et al. teaches the apparatus (FIG.2 & FIG.3) and its method of the well-known retransmission frames with the Radio Link Protocol interface (Abstract), wherein the RLP has periodic messages (in a twenty-ms time interval, FIG.9 304, column 12, lines 22-25), at the time of the invention, it would have been obvious to a person of ordinary skill in the art to have the time stamp in the message/frame taught by Haymond et al. in the frame of Rezaiifar et al. stored in the Biba et al.'s records stored in RAM 240 to resolving ambiguity in the reception of multiple retransmitted frames (column 1, lines 15-20 '003) and to effectively minimized the collisions (column 2, lines 12-20 '571).

Regarding **claim 50**, Biba et al. discloses the records in RAM comprising the internal state information (i.e. ACK) are retrievable by one (a first data-handling resource) of MODEMs 22 over an existing data connection (MODEM 22 to LATCH 254).

Regarding **claim 51**, Biba et al. discloses the records in RAM comprising the internal state information (i.e. ACK) are retrievable by another one (a second data-handling resource) of MODEMs 22 over a data connection (the second MODEM 22 to the corresponding LATCH 254).

Regarding **claim 52**, Biba et al. discloses the CONTROL 252 directs the MODEMs 22 to retrieve the records in the RAM (column 11, lines 62-68).

Allowable Subject Matter

18. Claim 37 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

19. The following is a statement of reasons for the indication of allowable subject matter:

The prior art of record fails to teach or suggest, alone or in a combination, among other things, at least a data communication interface as a whole, the combination of elements and features, which includes a resource internal state memory storing internal state information of existing data connections developed by a first data handling resources connected to a data bus over the course of connections, saved via a bus by the first data handling resource and retrieved via the bus by a second data handling resource connected to the data bus, for the second data handling resource taking over data directed to a data connection of the first data handling resource without loss of the data connection, wherein the internal state information comprising a list of received frame acknowledgements, a list of not received frame acknowledgements, records representing received frames, each record comprises the frame number, the last transmit time, and the data in the frame, wherein the data in the frame including data abut a large on-line stock order.

20. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Edith M. Chang whose telephone number is 571-272-3041. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay K. Patel can be reached on 571-272-2988. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Edith Chang
November 23, 2005

KHAI TRAN
PRIMARY EXAMINER